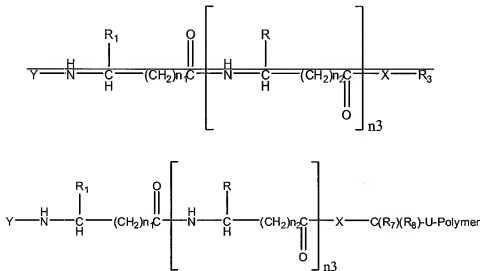


Amendments to the Claims

1-59 (Canceled)

60. (Currently amended) A water-soluble thioester or selenoester compound of the formula:



wherein Y is selected from the group consisting of: an amino acid, a peptide, and a polypeptide;

X is sulfur or selenium;

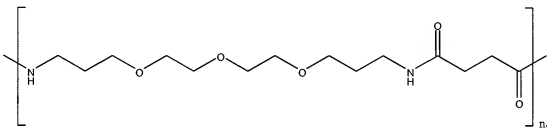
n_1 and n_2 are each from 0 to 2, and n_3 is from 0 to 100;

R and R_1 are individually selected from the group consisting of: hydrogen, a side chain of an amino acid, a branched alkane, a cycloalkane, an alkyl-substituted aryl or heteroaryl group, and combinations thereof;

R_7 and R_8 are each, individually, selected from hydrogen, substituted and unsubstituted linear or branched chain alkyl, aryl, heteroaryl and benzyl;

Polymer is selected from the group consisting of: $-[C(O)-\phi-C(O)-NH-\psi-NH]_{n_5}$ and $-[NH-\psi-NH-C(O)-\phi-C(O)]_{n_5}$, where n_5 is an integer from 1 to 100, and ϕ and ψ are divalent radicals selected from the group consisting of $-((CH_2)_{n_6}-(CH_2CH_2O)_{n_7}-(CH_2)_{n_6})-$ and $-((CH_2)_{n_6}-(O-CH_2-CH_2)_{n_7}-(CH_2)_{n_6})-$, where n_6 is an integer from 1 to 6 and n_7 is an integer from 2-50.

65. (Currently amended) The thioester or selenoester compound of claim 64 60 wherein Polymer comprises a divalent radical of having the structure:



where n_5 is an integer of from 2 to 12.

66. (Withdrawn) The thioester or selenoester compound of claim 64 wherein

ϕ is $-(CH_2-CH_2)-$ and ψ is $-(CH_2-(CH_2-CH_2-O)_3-CH_2-CH_2-CH_2)-$ or $-(CH_2-CH_2-CH_2-(O-CH_2-CH_2)_3-CH_2)-$.

67. (Previously presented) The thioester or selenoester compound of claim 60 wherein R is a group of the structure $-C(R_4)(R_5)(R_6)$,

where R_4 , R_5 , and R_6 each individually are selected from the group consisting of: hydrogen, linear, branched, substituted or unsubstituted alkyl, aryl, heteroaryl, and benzyl.

68. (Withdrawn) The thioester or selenoester compound of claim 64 wherein

Y is a peptide or polypeptide;

X is sulfur;

n_1 and n_2 are 0;

R₇ and R₈ are each individually selected from the group consisting of: hydrogen, -CH₃, and -CH(CH₃)₂.

69. (Withdrawn) The thioester or selenoester compound of claim 68 wherein:

n₅ is from 2 to 50, n₆ is from 1 to 3, n₇ is from 2 to 5; and

φ is -(CH₂-CH₂)- and ψ is -(CH₂-(CH₂-CH₂-O)₃-CH₂-CH₂-CH₂)- or -(CH₂-CH₂-CH₂-(O-CH₂-CH)₃-CH₂)-.

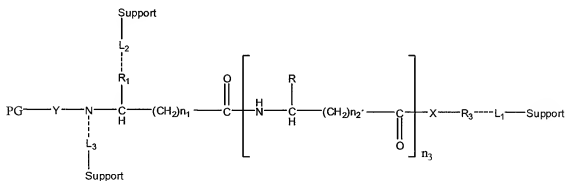
70. (Withdrawn) The thioester or selenoester compound of claim 60 wherein Y comprises an N-terminal group that supports chemical ligation.

71. (Withdrawn) The thioester or selenoester compound of claim 70 wherein the N-terminal group comprises cysteine or selenocysteine.

72. (Withdrawn) The thioester or selenoester compound of claim 71 wherein the cysteine or selenocysteine is protected.

73. (Withdrawn) A method of cleaving a thioester or selenoester compound from a solid support, said method comprising:

providing a thioester or selenoester generator having the formula:



wherein PG is a protecting group that may be present or absent,

Y is an amino acid, a peptide, or a polypeptide and may be present or absent, and when Y is absent PG is an amino protecting group that may be present or absent;

R and R₁ are individually selected from the group consisting of: hydrogen, a side chain of an amino acid, a branched alkane, a cycloalkane, an alkyl-substituted aryl or heteroaryl group, and combinations thereof;

R₃ is a group compatible with a thioester or selenoester and comprises a water-soluble polymer of a formula selected from the group consisting of: -[C(O)-φ-C(O)-NH-ψ-NH]_{n₅} and -[NH-ψ-NH-C(O)-φ-C(O)]_{n₅}, where n₅ is an integer from 2 to 100, and φ and ψ are divalent radicals that may be the same or different and are selected from the group consisting of -((CH₂)_{n₆}-(CH₂CH₂O)_{n₇}-(CH₂)_{n₆})- and -((CH₂)_{n₆}-(O-CH₂-CH₂)_{n₇}-(CH₂)_{n₆})-, where n₆ is an integer from 1 to 6 and n₇ is an integer from 2-50.

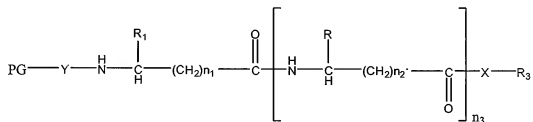
X is sulfur or selenium;

n₁ and n₂ each are from 0 to 2; n₃ is from 0 to 100;

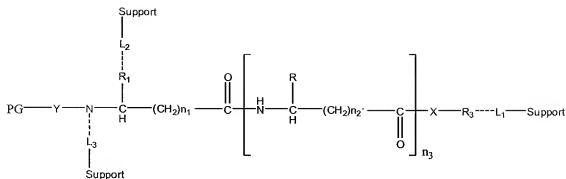
each L₁, L₂ and L₃ is a linker cleavable under non-nucleophilic conditions wherein only one of L₁, L₂, and L₃ is present;

Support is a solid phase, matrix or surface; and

(b) cleaving said linker under non-nucleophilic conditions to generate a thioester or selenoester compound comprising the formula:



74. (Withdrawn) A thioester or selenoester generator comprising a composition having the formula:



wherein PG is a protecting group that may be present or absent,

Y is an amino acid, a peptide, or a polypeptide and may be present or absent, and when Y is absent PG is an amino protecting group that may be present or absent;

R and R₁ are individually selected from the group consisting of: hydrogen, a side chain of an amino acid, a branched alkane, a cycloalkane, an alkyl-substituted aryl or heteroaryl group, and combinations thereof;

R₃ is a group compatible with a thioester or selenoester and comprises a water-soluble polymer of a formula selected from the group consisting of: -[C(O)-φ-C(O)-NH-ψ-NH]_{n₅} and -[NH-ψ-NH-C(O)-φ-C(O)]_{n₅}, where n₅ is an integer from 2 to 100, and φ and ψ are divalent radicals that may be the same or different and are selected from the group consisting of -((CH₂)_{n₆}-(CH₂CH₂O)_{n₇}-(CH₂)_{n₆})- and -((CH₂)_{n₆}-(O-CH₂-CH₂)_{n₇}-(CH₂)_{n₆})-, where n₆ is an integer from 1 to 6 and n₇ is an integer from 2-50.

X is sulfur or selenium;

n₁ and n₂ each are from 0 to 2; n₃ is from 0 to 100;

each L₁, L₂ and L₃ is a linker cleavable under non-nucleophilic conditions wherein only one of L₁, L₂, and L₃ is present;

Support is a solid phase, matrix or surface.